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Committee on the Peaceful Uses of Outer Space

402nd Meeting
Tuesday, 14 June 1994, 10 a.m.
Vienna

Chairman: Mr. Hohenfellner . . . . . (Austria)

The meeting was called to order at 10.10 a.m.

Report of the Legal Subcommittee on the work of its thirty-third session (A/AC.105/573) *(continued)*

Mr. Pedsci-Bourel (Argentina) *(interpretation from Spanish)*: I wish first of all to express my delegation's appreciation for the work carried out by the Chairman of the Legal Subcommittee, Mr. Vaclav Mikulka of the Czech Republic. At the last session he once again demonstrated his talents as a jurist and as a leader in guiding the work of the Legal Subcommittee.

My delegation would like to refer briefly and specifically to the tasks undertaken by the Subcommittee.

With regard to the question of the principles relevant to the use of nuclear power sources in outer space, we believe that the decision provisionally to suspend the consideration of this subject at the next session was wise since it does not prevent the Working Group from being convened if, in the Legal Subcommittee's opinion, substantive progress is made on this subject at the 1995 session of the Scientific and Technical Subcommittee. At the same time, this decision does not prejudice the positions of various delegations with respect to the duration of the Subcommittee's sessions.

In my delegation's opinion, no satisfactory progress was made on the subject of the definition and delimitation of outer space and the utilization of the geostationary orbit, although there was some forward movement.

On the sub-item "The definition and delimitation of outer space", my delegation is confident that the commitment to continue discussion on the draft questionnaire at the next session will enable us to make some progress towards achieving a reasonable consensus on the reference questionnaire. In this connection, we urge delegations with particular interests in this matter to make the necessary efforts to help us, in some way, to unblock the current situation.

With regard to the sub-item "The geostationary orbit", my delegation believes that the debate which took place on document A/AC.105/C.2/L.192 was reasonable and will make it possible to continue discussion of this item at the next session.

My delegation, as a sponsor of document A/AC.105/C.2/L.182/Rev.1, on the legal aspects related to the application of the principle that the exploration and utilization of outer space should be carried out for the benefit and in the interests of all States, taking into particular account the needs of the developing countries, welcomed the interesting exchange of views that took place during the 1994 session of the Legal Subcommittee. On the basis of the constructive and specific criticisms we received, we shall have to reformulate some principles and take account of certain elements not originally included in the document. My delegation would like formally, in this plenary meeting of the Committee, to express its commitment to this task. Furthermore, we wish to emphasize, as a conclusion of the debate which took place, that we believe that there are good foundations for continued work on this matter, to which we attach great importance.

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The Argentine delegation welcomes and supports the Brazilian proposal to hold a seminar on the subject of space debris, on the understanding that this will not prejudice any of the tasks carried out by the Scientific and Technical Subcommittee on this matter. We believe that a seminar can be an appropriate forum for an exchange of views on a subject which is important and clearly topical. We trust that at the next session of the Legal Subcommittee it can actually be decided to convene such a seminar.

Before concluding my statement, I should like to emphasize that my delegation attaches fundamental importance to the Legal Subcommittee's devoting part of its energies to re-examining what subjects should be discussed, the priorities that should be assigned, the additional subjects that deserve its attention, its methods of work and so on, given that any institution or collegiate body is reinvigorated by a process of self-analysis or self-explanation if it is carried out seriously and decisively.

Finally, the Argentine delegation reiterates its commitment to work constructively on the tasks of the Legal Subcommittee so that it can regain the role of a vanguard and creative body which it had for many decades in the fundamental task of bringing about consensus on various positions, and thus proceed to the codification and progressive development of the principles of outer space law.

Mr. Hodgkins (United States of America): My delegation would like to offer some general comments concerning agenda item 6, "Report of the Legal Subcommittee".

First, I should like to express my delegation's satisfaction with the superb work done by the Subcommittee's Chairman, Mr. Vaclav Mikulka of the Czech Republic.

I think that at this point in our deliberations I will forgo reiterating my delegation's views on the substantive issues being taken up by the Legal Subcommittee. Those views are well known and were fully discussed at the Subcommittee's last session. Instead, we want to comment briefly on the future of the Subcommittee's work.

We were pleased with the results of last week's informal meeting on the organization of work of the Legal Subcommittee; indeed, my delegation and others have called for such a discussion for many years in this Committee, and the meeting on Friday was a significant step forward. We were particularly encouraged by the cooperative spirit that characterized the debate, but it was also clear that we are going to face many difficult questions that will require compromise on the part of all delegations. How the Subcommittee organizes its work and uses the available conference resources is crucial to making it an effective deliberative body in the United Nations system.

As we look to the future, it is important to remember the role that the Subcommittee plays in promoting international space cooperation. In establishing the Committee on the Peaceful Uses of Outer Space (COPUOS) over 30 years ago, the General Assembly mandated COPUOS to study the nature of legal problems which may arise from the exploration of outer space. With this in mind, my delegation firmly believes that matters considered by the Legal Subcommittee should not unnecessarily impede further progress in the exploration and use of outer space.

From the legal standpoint, space activities provide complicated, and even unique, challenges, so we must take a considered and systematic approach to dealing with the future work of the Subcommittee.

Mr. Pocar (Italy): Since this is the first time I have spoken at this session of the Committee on the Peaceful Uses of Outer Space (COPUOS), let me express my delegation's satisfaction at seeing you, Sir, continuing to preside over our deliberations at this, our first regular session in Vienna. Your experience and wisdom in guiding the debates and the consultations among members are the best guarantee of success in the work of the Committee.

Commenting on agenda item 6, the Italian delegation endorses with interest the report of the Legal Subcommittee on the work of its thirty-third session. Although no decisive progress has been made on any of the issues under consideration, the debate that has taken place on each of them has been rich and concrete in many respects. No doubt such an approach was promoted by the flexibility introduced in the methods of work of the Subcommittee, which must also be recognized and underlined with satisfaction, as a useful means to rationalize and improve the efficiency of the Subcommittee's deliberations. We take this opportunity to hail the way the Chairman of the Subcommittee made use of that flexibility during the session.

However, and notwithstanding these positive developments, the Italian delegation still thinks that other steps should be taken as regards the time allocated to the Subcommittee and its agenda. The latter, in particular,

should in our view be rethought and reorganized in order to avoid items on which no progress has been made for a significant number of years preventing the Subcommittee from dealing with other issues discussion of which might prove more fruitful. In this connection, we view with interest suggestions that emerged during informal consultations and favour consideration of these proposals at the next session of the Subcommittee.

Turning briefly to the items discussed at the last session of the Legal Subcommittee, we have taken note of the current state of the debate on the subject of the delimitation of outer space and of the use of the geostationary orbit, and have followed with attention the statements made by other delegations. Although we are not as a matter of principle against exploring new or alternative approaches to the issues that are on the agenda of the Committee and its Subcommittees, we still do not think that any progress can be made in these areas. On the one hand, the subject of delimitation does not have at present, in our view, any standing in current international space law. As to the geostationary orbit, the problems that the Subcommittee might consider are already being dealt with by the International Telecommunication Union (ITU); we maintain the view that moves that could alter or undermine the efficient and well-balanced regulations established by the ITU should be avoided.

The Italian delegation has followed with attention and taken part in the discussions on the item concerning outer space benefits, and wishes to stress the role of cooperation between industrialized and developing countries in this respect. Italy itself is taking part in a wide range of activities with direct benefits for developing countries; these are being carried out in accordance with multilateral treaties and agreements, and within international space organizations. Although we maintain the doubts we have expressed on previous occasions as to the need at the present stage to draw up principles or guidelines besides those already existing in the basic treaties on outer space, consideration of the forms in which multilateral and bilateral cooperation is currently taking place would certainly be fruitful with a view to developing and promoting a general framework in the interest of all States.

Finally, let me refer briefly to a subject that has been touched upon by several delegations: the subject of space debris. My delegation was among those which from the beginning favoured seeing this issue considered by the Scientific and Technical Subcommittee, and we welcome the progress that was made there at its last session. However, we think that the problems that this subject raises should be further clarified at the scientific and technical level before taking them to the Legal Subcommittee for consideration. We also have taken note with appreciation of the efforts made by other bodies, such as the International Law Association, in this field; certainly, future consideration of the legal side of this urgent matter will benefit from the debates that have taken place or will take place in other forums.

Ms. Gonçalves Dias (Portugal): Our general view of the work of the Legal Subcommittee at its thirty-third session is a positive one. In spite of the fact that, as we all know, there are highly controversial items on its agenda that have been unresolved for years, the Legal Subcommittee has made considerable efforts to cope with other important items and with new developments of relevance to the international community.

One of these is the issue of outer space benefits. We understood from the discussions at the last session of the Subcommittee that the apparent disagreements on the document under discussion relate more to form than to substance. As stated in annex III of the report (A/AC.105/573), the intention behind the proposed set of principles is not to limit the freedom of States to choose their partners or modes of cooperation but, rather, to serve as guidelines for enhancing cooperation. If approved by consensus at a later stage, a set of principles of that kind could certainly improve the global atmosphere for cooperation in this field.

Some adjustments in the drafting of the working paper contained in document A/AC.105/C.2/L.182/Rev.1 might facilitate consensus, so we look forward to the revision of that paper which its sponsors are working on.

Looking ahead to the next session of the Subcommittee, we want to state that we can agree with the suggestion on holding a seminar, which might serve to inform the members of the Subcommittee on the results of legal studies on the issue of space debris. This would help clarify our ideas on this matter, and would, of course, not imply the necessity for any move to include this subject on the agenda of the Subcommittee.

The identical reasoning could be applied to the questionnaire on aerospace objects, which, in our view, should be the subject of detailed discussion during the next session.

In general, we consider it important that the Legal Subcommittee should, as far as possible, anticipate factual

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developments and factual problems and be kept regularly informed on the work of legal experts in the field of space law. The Subcommittee should, in our opinion, not only react to problems when they emerge, but anticipate them.

Mr. Louet (France) *(interpretation from French):* I had not initially intended to speak on this item of the agenda, since my views are very amply and well expressed in the report of the Legal Subcommittee before the Committee. However, I decided to speak in order to comment on the statement by the representative of Brazil. He raised a question which was abundantly dealt with in the Legal Subcommittee and which is reflected in paragraph 43 of annex II to the Subcommittee's report.

In his statement, the representative of Brazil - in a very significant fashion in my view - discussed two subjects: first, the status, working methods and programme of work of the Legal Subcommittee and, secondly, the possible convening of a seminar on space debris during the Subcommittee's session.

I think the fact that these two issues were broached together is in itself very interesting. The Brazilian representative said that for some delegations the efficient utilization of the resources of the Subcommittee had come to be synonymous with the reduction in the length of its session. I should like to point out that I do not at all agree with this. I am not asking for a reduction in the length of the sessions. Quite the contrary: I think it important that the Subcommittee should constantly adjust the length of its sessions according to the nature of the subjects submitted to it for discussion. However, I would not want the extension of the duration of the Subcommittee's session to be an objective either. I do not think that maintaining the duration should be considered as more important than the work done by the Subcommittee. I shall not be so cruel as to dwell on the real motives of those who would prolong the sessions of the Subcommittee, since that would not be to the glory either of the Subcommittee or of Headquarters.

The representative of Brazil advocated the convening of a seminar on the grounds that that would keep the members busy. I regret to say that I cannot accept such an argument. It is not a question of keeping people busy. I think that it serves no purpose to find work just to fill the time available. That is not the right approach.

The value of the seminar itself has also been adduced as an argument in favour of it. There again I absolutely do not agree. We had a long discussion on this and agreed that the Scientific and Technical Subcommittee would go into this matter in detail and would study it in depth before possibly considering a request to the Legal Subcommittee for its views. If we ask the Legal Subcommittee to take this matter up for consideration now, we are simply introducing confusion into an already difficult discussion.

I have said this in the Legal Subcommittee and I say it again here simply because this matter has received detailed consideration. But I do not believe that these points I have made are new.

Mr. Riobo (Chile) *(interpretation from Spanish):* My delegation took part with great interest in the informal consultations on the future programme of work, the organization of work, and the agenda of the Legal Subcommittee. My delegation believes there is a broad range of legal matters which have not been considered in the Subcommittee because it has - quite rightly - concentrated on major subjects of international public law with a view to resolving some difficult problems in an area which is new and being formulated. But we believe that in the current situation, particularly the greater traffic between countries in the field of space technology, the Legal Subcommittee should devote itself to the consideration of other agenda items and points of view. In this connection, we listened with great interest, for example, to the suggestions made here by the delegation of Germany.

My delegation also believes that the Legal Subcommittee should, during the organization of its work, take up the subject of coordination and communication with the Scientific and Technical Subcommittee. For example, the subject of space debris, which is dealt with specifically in the Scientific and Technical Subcommittee, could also be dealt with in a year or two by the Legal Subcommittee. It is not necessary for one Subcommittee to conclude the whole consideration of an agenda item before the other Subcommittee can take it up at least at the level of the principles involved. In that light, we believe it would be very constructive to consider the Brazilian proposal to hold a seminar on the subject of space debris to see what, in principle, could be the major topics for discussion in the Legal Subcommittee; this would be, of course, without prejudice to the work that might be proceeding in the Scientific and Technical Subcommittee on the technical aspects of that item.

Mr. Cassapoglou (Greece) *(interpretation from French):* For my part, I should like to congratulate you, Sir, on your efforts to resolve this very thorny problem of the enlargement of the Committee. We have really

appreciated what you have done, and we hope the eventual solution will be the most advisable one.

I should like to comment briefly on the work of the Legal Subcommittee, and especially on the role it has played since 1968. For almost 30 years now the Subcommittee has been engaged in very good and constructive work. We, as legal experts, are very aware of this and we realize that regulations never stand in the way of technological progress. Quite the contrary: activities taking place in a legal context which is dependable and predictable facilitate work in complex spheres such as outer space, with particular reference to its use for peaceful purposes.

As concerns the question of the delimitation of outer space and in particular all the problems raised with regard to the use of the so-called geostationary orbit, we agree with our colleagues that this cannot be given separate status as compared to the status of outer space in general.

For instance, one cannot compare - depending on the type of vehicle one uses, of course - traffic on a highway with traffic on a small road, or the situation of a person who lives near a highway with that of one who does not. As members know, Greece did a considerable amount of work on formulating article 33 of the Nairobi Convention. We believe that the method used to deal with this problem is very satisfactory and that it should continue to be used. The only thing that we can do here is to facilitate other types of use which are not determined by the role of ITU.

Once again, Mr. Chairman, I should like to ask you to accept our hearty thanks for your role.

Mr. Telles Ribeiro (Brazil): I should like to thank you, Mr. Chairman, and, through you, the Committee, for allowing me to abandon for a few minutes my role as Rapporteur and to take up my role as head of the Brazilian delegation.

I think that this is a good occasion to react in a constructive way to the comments that the representative of France has just made with regard to the suggestion we formulated in the Legal Subcommittee about the possibility of holding a seminar on space debris in that Subcommittee.

As all our colleagues know, we did make that suggestion. In fact, it was supported by many delegations present here - if I recall correctly, by Canada, Russia, India, Argentina, Colombia and Chile - and I think I am omitting at least three or four others. Also, Portugal was added to this number just a few minutes ago. I think that the delegations which supported us on that occasion and support us now have no fear that there would be duplication between the two Subcommittees. Quite the contrary: all the delegations know that it is of the utmost importance that this matter be seriously considered in the Scientific and Technical Subcommittee. Otherwise, it would be quite impossible for the Legal Subcommittee to legislate on this matter in the future, if the occasion arose and if the technical and scientific conclusions advised us to do so.

I believe, therefore, that the objective of the delegations that supported us is the same as our own - to have a complementary avenue - because, to our minds, knowledge is not a source of fear. We think, on the contrary, that knowledge is one of our obligations. In fact, we are sometimes even slightly suspicious of some of the reactions we have had in this respect. Once the duplication problem is taken care of as we have indicated, we believe that we could only gain from such a seminar.

But I want to clarify something else: We never suggested that the seminar would take place simply to occupy us - although it might be a very good idea. But what we had in mind was to start a debate - one that actually exploded, as it were, last Friday in the informal consultations. What we saw here last Friday was - and you said so yourself, Mr. Chairman - a rather unique moment. We saw delegations voicing differences but converging around one important theme: the urgency of giving substance to this Subcommittee, which we all consider very valuable for the future of the Committee itself. What we saw Friday and what we hope to see at the next session of the Legal Subcommittee is an effort to add ideas to our work, and it was to this end that we proposed that the seminar take place - not just to kill time. I say this with great respect for the opinions of our French colleague, with whom I share a personal friendship, apart from our work here.

The Chairman: We have concluded our consideration of agenda item 6.

Agenda item 8

Spin-off benefits of space technology: review of current status

Mr. Utkin (Russian Federation) *(interpretation from Russian):* In the context of the detailed discussions on agenda item 8, our delegation would like to address the complex and mutually related important problems of conversion, the dual use of space technology resources, the

transfer and utilization of the achievements of new technologies, and space exploration in the economic sphere.

The process of conversion consists of a complex set of political, military, economic and social problems, whose solution requires a comprehensive approach. It is not just a "campaign" with periodic weakenings of international tension but in fact is an ongoing, constant component of the economic policy of countries whose defence industries take up a major part of their gross national product.

It is a secret to no one that space exploration serves as a significant catalyst for technical and social progress. In the future, this will become even more true. At the very apex of progress, a major place is occupied by space exploration and also possibly by nuclear energy, which, because of the great requirements placed on production in that area, give rise to rapid development in new areas of science. They also put huge demands on a whole set of industrial sectors - the machinery construction industry, radio electronics, transport, information and computer technology - and at the same time they stimulate rapid development in those spheres.

As the chief designer of military strategic rockets of the SS-18 and SS-24 type, of the ZENIT and CYCLON launch vehicles, of spacecraft of the Okean and INTERCOSMOS series and of others, built earlier in the Soviet Union, and now as the director of Russia's main scientific and technical research institute on space technology, I find these questions particularly important and close to my heart.

Work on conversion and on the development of new technologies in rocket and space technology and their application in various areas of the economy of the States has already led to tangible, practical results; in the future it should deal also with expenditure on space programmes.

Allow me to use the example of Russia and briefly describe some of the questions we have addressed. Producing direct and spin-off benefits through conversion and the transfer and use of space technology in industrial sectors in Russia is one of the major thrusts of our national activity, which we are undertaking in the context of the federal space programme to the year 2000. The achievements in the space field are being applied in three main areas.

The first is the direct use of space resources for economic purposes and work on the conversion of defence space resources to the solution of economic, scientific and commercial problems by partial modifications of defence space systems. Currently, the main developers of space resources have prepared over 75 conversion projects, including 20 that require no alteration, related to redistributing the functions of space systems so that they can be used for specific civilian purposes.

We are very pleased to state that the main scientific research institute on space technology in Russia, with the active participation of the main design organizations in Russia and Ukraine - this has already been referred to by the representative of Ukraine - are carrying out multi-level work, among other things on the basis of military rocket technology. For example, there are proposals to use military rockets, with minimal changes, for the implementation of peaceful tasks, the prevention of natural disasters and the timely delivery of cargoes of assistance for areas that have suffered disasters. Navigational, geodesic, radiotelephone, television and other forms of information received from dual-use satellites - military and civilian - are widely benefiting various Russian and foreign users. Members are well aware of examples of international systems set up on that basis: GLONASS, NAVSTAR and KOSPAS-SARSAT. It is now possible for any State and any user in Russia to receive timely high-resolution images recorded by military means.

While implementing this cooperation, we are involved in comprehensive inter-State experimental work on the "Oriel" - "Eagle" - theme, which seeks rational ways to apply and assess the effectiveness and economic benefits of aviation and space systems and multiple-use rocket systems. On other complex scientific and research subjects, we are defining the prospects for space exploration, working on remote-sensing of the Earth by satellite and determining the characteristics and composition of a future system of environmental monitoring. In the interests of economic development, we are studying ways of creating a new generation of dual-use systems. One of the main areas of the institute's research is study of the problem of space debris and ways of dealing with it. On all these subjects, we are prepared to engage in broad international cooperation.

The second area is the transfer of what I would call advanced space technology to other spheres. We all know that most new technologies, developed and mastered in the production of space technology, can be used by both civilian and military consumers. For example, only 20 technologies have a specific use that can be demonstrated. This means that space technologies can be applied with even greater success in the production of economically

useful products. A major area of interest, for example, is that of technologies developed on the basis of scientific research, including special types of welding, electronic-ray welding, laser welding and so on.

Technologies developed for space rockets, including corrosion-resistant steels and welds, inflammable fibers, composite powder-based ceramic, and other new materials, as well the technologies for producing them, are now being widely applied in various areas of the economy. Thus, for example, at this time space technology is providing new advanced finishing, insulating and anti-friction materials for the housing industry and, in the field of energy, is providing catalysts for the scrubbing of smokes and gases at thermo-electric power stations. Products of carbon and carbon-based composite materials are much stronger than traditional graphites.

The third area is activation of the country's participation in the international commercial market for technologies, which is developing strongly at this time. For example, on the basis of an agreement between Russia and the United States, we intend to carry out commercial launches of the Proton launch vehicle at a time when there is great competition in the launching of such vehicles.

Space technology is becoming a product in itself and must satisfy the requirements of the world market. One area of particular interest in this respect is technology for the production of special surfaces, for the strengthening of instruments, for plasma fusion of bimetallic products and for containers for the storage of aggressive materials. Stationary plasma motors are being experimented on in the United States. We are emerging into the world market on the strength of work in a number of fields.

Currently, in Russia and the countries of the Commonwealth of Independent States, a strengthened mechanism for the transfer of the achievements of space technology is being developed; the necessary scientific and technical policy is being drafted simultaneously. Currently, the idea of increasing the competitiveness of our products and services through the use of space technology is being increasingly supported by state and commercial structures. The development of new space technology for production in microgravity conditions, with qualitatively new semiconductors and optical materials and biological and medical substances are opening up real prospects for practical benefits.

We clearly understand that global problems facing the world community sometimes cannot be solved by one State alone, however developed it may be or whatever the strength of its economy. Major problems can be effectively and rationally solved only by means of broad international cooperation. That having been said, the implementation of major projects obviously requires a quest for new types of solutions as well as the planning and creation of space systems. At the same time, a rational and effective mechanism must be worked out for the distribution and exchange of new technologies among countries without discrimination. Russia is ready to move along those lines towards the broadest possible mutually beneficial cooperation with all States concerned.

Without claiming to have shed light on all the problems facing mankind in the development of practical benefits, we trust that we have indicated the great possibilities and potential of a clearly defined and effective use of the achievements of space science and technology in the interest of the social and economic development of all States.

Mr. Zaman (Pakistan): I have only a small suggestion to make on agenda item 8, "Spin-off benefits of space technology".

The Committee on the Peaceful Uses of Outer Space recommended during its last session that the United Nations Programme on Space Applications consider including in at least one of the training courses, seminars or experts meetings each year the subject of promotion of spin-off benefits from space. This should do much to educate the educators and the public alike about the immense utility of these spin-offs.

After hearing the very elaborate and exciting statement just made by the representative of the Russian Federation, I feel that there is now a need to consider setting up a coordinating body to serve as a centre for collecting information pertaining to spin-offs and disseminating it to the international scientific and industrial community in order to enlarge the scope of their use of spin-offs in the wider humanitarian interest.

Mr. Hu Zhongmin (China) (*interpretation from Chinese*): I should like to offer some information on certain Chinese achievements in the area of the spin-off benefits of aerospace technology.

As everyone knows, since the introduction of the first artificial earth satellite, the rising number of space activities and the development of space technologies have played an ever greater, and indeed unique and irreplaceable, role in

seeking the progress of society and civilization for the benefit of mankind.

In the mid-1950s, China began to implement its key programme for the development of space technology. Thirty years of arduous effort have made it possible for China to improve its capacities and level of space technology greatly.

Full research and production structures, including associated areas, have been developed. As a result, we are now in a position to undertake scientific experiments, technical trials and remote sensing for the re-entry of satellites, as well as to design and produce all types of artificial satellites, including those for telecommunications and meteorology. We not only have the launchers of the types Long March (LM) I, II, III, III-A and IV, as well as the large launcher LM II-E, with side-by-side boosters, but have also mastered related key technologies that make it possible to launch satellites into any orbit, and to relocate, control and recover them. In China, 36 successful launches have taken place since 1970, which has made it possible to place 41 scientific and technical satellites in orbit for practical applications.

All this has also enabled us to gather a staff of engineers and researchers who are very sophisticated, dedicated and competent.

Space technology, as an engineering system of great significance for mankind, covers practically all areas of the natural sciences and employs the most recent achievements of modern science and technology. It leads to the development of a whole range of advanced technologies and gives an impetus to the technological transformation of traditional industries as well as to technological progress, thus playing an increasingly important role in the development of society and the progress of mankind.

The Chinese Government attaches great importance to the development and use of aerospace technologies, but it also scrutinizes very carefully the ways in which such technology is re-exploited and reused.

Converting these technologies for use in other sectors of the national economy is a very important facet of the application of aerospace technologies. Chinese aerospace industries have in the past few years achieved very positive results in this field.

Since the 1980s the Chinese aerospace sector has ceaselessly pursued strategies aimed at converting military production into civilian production. As a result, thousands of types of equipment necessary for the various sectors of the national economy as well as durable and useful consumer goods have been developed. Among space technologies that have thus been applied to other uses, 20 per cent are the result of technological re-exploitation.

Some aerospace technologies, for example satellite temperature control techniques, low temperature controls, remote sensing, special machine techniques, and repeated tests, have been converted for use in other basic industries, thereby playing an important role in improving the work environment, conserving energy and increasing productivity.

I would like to offer some concrete examples here to illustrate what I have just said.

Chinese aerospace sectors have developed, on the basis of satellite temperature control techniques, a low-temperature thermal pipe exchanger. By adding this exchanger to a thread-preparing machine and using the recovered residual heat, it is possible to save annually per machine energy equivalent to 66.5 tons of standard coal; moreover, the working speed is increased by 33 per cent. This technique is now also used in ceramic ovens, glassmaking and industrial boilers.

In the field of materials for the production of energy, we have developed a new type of battery, a zinc-air battery, developed on the basis of the fuel battery H2-O2, used in space navigation, and the high-powered zinc dioxide battery, used in military vehicles. This battery is exceptional for its high massive energy flow - 880 watts per kilogram, low cost, excellent performance at low temperatures and stable voltage. Thus it has a very wide range of possible uses in beacons, telecommunications, lighting, seismography, and so forth.

In the field of human intervention in weather forecasting, meteorology, fire-fighting and petroleum detection here too encouraging results have been achieved by using techniques employed in solid fuel rockets to manufacture rockets to increase rainfall and prevent hail, anti-lightning and anti-fog rockets, lightning-rod rockets, lightning-deflector rockets, fire-fighting rockets, petroleum-extraction rockets using high pressure gas techniques, and solid propulsion agents for the thermal extraction of thick petroleum.

In the field of automated control techniques, sensitizers whose use was previously limited to regulating

satellite positioning have made it possible to develop the first photo-electric diameter measurement system for hot rolling, which, in turn, has improved working conditions, increased productivity and allowed for greater compliance with products standards. This system, used in the Xinhu steel-works in Shanghai, has made it possible to save 600 tons of steel per year.

There have also been very positive spin-offs from the transposition of aerospace informatics technologies and radio-electric equipment, in the fields of networking techniques, system centralization, artificial intelligence, and so forth. We have recently developed command systems for the assembly and dispersion of industrial processes, industrial PC-computer control systems, programmable control systems, "smart" process command systems, automation of common transport systems, and so on. These systems are widely used for, among other things, automatic dose control of materials for the production of cement, chemical treatment of water in thermal stations, automatic surveillance of the atmospheric environment, security and quality control systems, electrical network command systems, and control centralization in air traffic control towers.

The Chinese aerospace industries are also trying to apply advanced aerospace technologies to general as well as specific engineering projects. In this respect, major work has been undertaken on simulation laboratories, on the recently erected giant Buddha in Hong Kong, on the manufacture of double-walled spheric reservoirs without moulding, and so forth. All these projects use advanced techniques from the transposition of technology, in such fields as soundproofing, electro-magnetic screening, surfacing, improved anti-seismic resistance, air conditioning, prevention of combustion, cleaning, hothouse temperature control, environmental protection, and so on.

What I have just described certainly does not cover all of the achievements in Chinese aerospace work - indeed there are an ever-growing number of such achievements. I can assure the members of the Committee we shall be reporting next year on other, newer, applications of these technologies.

The re-exploitation and the reuse of aerospace technologies certainly opens vast prospects for us. That is why the Chinese Government actively supports the sectors involved in this effort. Our aim is the application of aerospace technologies to civilian industries at a higher level of quantity and quality, and more rapidly.

The Chinese space-technology industry sincerely wishes to develop exchanges with its foreign counterparts, to contribute jointly with them to the peaceful use of outer space for the benefit of mankind.

I wish to inform the Committee that I have with me documentation which describes not only the positive spin-off of aerospace technologies but also the Chinese aerospace services - namely, the National Aerospace Administration, the Chinese Aerospace Society and related services. I would ask members who are interested in this documentation to contact the secretariat.

Mr. Hodgkins (United States of America): Many new and improved products and processes have continued to result from new technologies developed by the United States space programme in pursuit of its mission objectives. A number of the uses of NASA-developed space technologies released during 1993 have aided in new applications and uses on Earth. New advanced technologies in materials research, robotics and telecommunications, life sciences and many other fields, are continuing to find alternative uses in many areas of human and economic concern.

In the field of health and medicine - one of the most promising areas in which space-related technologies have been transferred and applied - advanced cooling systems developed by NASA for astronaut use have helped alleviate the heat-stress symptoms of those afflicted with multiple sclerosis (MS). Multiple sclerosis is a progressively disabling disease of the central nervous system that strikes men and women in the prime of life. Body cooling of even one degree Fahrenheit can produce dramatic improvements in MS symptoms. The Multiple Sclerosis Association of America (MSAA) has now adopted space-suit cooling technology in a treatment campaign to help more than 300,000 MS patients in America.

The NASA Lewis Research Center has recently developed an ion exchange membrane for advanced space batteries. The membrane filter, surprisingly, has an affinity to absorption of heavy metal ions prevalent in industrial wastewater systems. During 1993 NASA worked on an experimental industrial filtration method with industrial electroplaters to develop large-scale systems that would yield clean water from heavy metal industrial production facilities. If successful, application of the ion exchange membranes to mining operations to filter heavy metal residues will be undertaken.

Public safety has also been an area that has benefited from space-developed technology. In one example, quality assurance inspectors of industrially produced products are using low-level X-ray machines that have incorporated X-ray astronomy research conducted by NASA. Low-level X-radiation in these devices is less than 5 per cent of that of standard X-ray systems, thus protecting operators of such systems on assembly lines. In fact, the radiation levels are so negligible that the United States Government no longer requires operators to use lead aprons, film badges or protective barriers.

Those and other examples of aerospace spin-offs are the product of deliberate and aggressive interaction between NASA and industrial and commercial concerns. Such efforts take place through the active dissemination of information, personal contacts between NASA scientists and engineers and users of technology, and even partnerships that have been forged between NASA and industry.

At this point I should like to indicate to the Committee that we have several documents at the back of the Conference Room for consideration by members. The first document has nothing to do directly with spin-offs and I failed to mention it in my opening statement. It is entitled "One Giant Leap for Mankind", a commemorative publication on the twenty-fifth anniversary of the moon landing. We have the most recent spin-offs publication for 1993 that NASA has produced and then we have a 30-year commemorative edition of NASA spin-offs.

The United States is firmly committed to meeting the challenges of space exploration as we approach the twenty-first century. We also feel confident that our efforts to continually seek to transfer and exploit useful technologies here on Earth will contribute to yielding significant future dividends such as these for the benefit of all mankind.

As a tangible expression of that commitment, it is my pleasure to inform the Committee that the United States Department of State has recently approved a grant of $30,000 to the United Nations Programme on Space Applications. This grant will support a workshop for developing-country experts on adapting space technologies to promote sustained development. We are planning to hold the workshop within the next year, and look forward to reporting on the results of that important meeting.

Mr. Webb (Canada): The Canadian Government has been working for many years to ensure that the Canadian space programme results in concrete benefits to Canadians, in the short, medium and long term alike. Our space programme has often led and continues to lead to the introduction and development of new technologies, products and services with concrete applications on Earth in the space and non-space sectors. I would like to take a few moments to describe a few of the tangible past or expected spin-off benefits resulting from the Canadian space programme.

First, the expertise acquired in the development of the mobile servicing system for the International Space Station has led to the identification of over 60 technologies with proven or anticipated market potential for terrestrial applications. Among the possible utilizations of these robotic techniques are robotic technologies for underwater research, forestry and mining applications, as well as energy-management systems and the cleanup of nuclear-contaminated sites. In the field of life sciences, Canadian and international research continues to point to a future of enhanced knowledge about the human body as well as new or improved diagnostic techniques and pharmaceutical products for the treatment of diseases on Earth. For example, a Canadian company based in Montreal has now used space technologies in the development of an artificial heart and has signed an agreement with a medical research institution for that purpose.

Mr. Forna (Romania), Vice-Chairman, took the Chair.

In the field of Earth sciences, investments in satellite scientific and remote sensing instruments and systems continue to yield essential data for important applications in geography, geology, the study of ice oceans and icebergs, and disaster warning, prevention and relief. These investments have also led to significant progress in the management of our natural resources and the protection of the environment. This is expected to continue with the launch in early 1995 of the Canadian Radarsat Earth-observation satellite, able to see through clouds and under the cover of darkness.

There is one additional spin-off benefit that needs to be mentioned. The Canadian experience has been that investment in space education and awareness activities harnesses the unique appeal of space for Canadian youth and thus helps promote careers in science and technology, contributing to the long-term skills necessary for a knowledge-based economy.

Canada strongly believes that the benefits I have highlighted and many others can best be realized and shared through international cooperation. This explains why such an important part of the Canadian space programme is

premised on collaborative efforts with many nations and organizations. We welcome any productive ideas for enhanced cooperation in all fields of space activities.

Mr. Chandrasekhar (India): Our delegation would like to make a few remarks on the recent progress in India in promoting and realizing spin-off benefits of space activities. From the beginning, the Indian space programme has attached importance to the dissemination of knowledge and skills gained in the development of space technology and its applications for the broader benefit of society. As an act of policy, the Indian space programme has been pursuing the transfer of technology on promotional terms to encourage various spin-off uses. A scheme that was instituted by the Indian Space Research Organization more than a decade ago resulted in the transfer of 216 technologies, which served to expand space application markets in fields such as telecommunications, meteorology and natural-resources management, and also in a significant number of spin-off uses.

The Indian space programme has also executed over 100 consultancy projects for the benefit of industries, to assist in their diversification and product-development efforts. All in all, some 500 industries, ranging from small to large in size, have benefited from their partnership with the space programme. During the fiscal year 1993 to 1994, technologies for 12 new products and processes have been transferred to Indian industries. These include items such as temperature sensors, telemetry systems, optical solar reflectors and low-cost image analysis equipment.

The last year has also seen a growing demand for some of the spin-off products earlier commercialized in industry, thus providing scope for additional licensing to new industries. Examples of such products include a multilingual word processor, a process for producing precipitated silica from waste items such as the ashes of rice husks, and a cleaning chemical used by industrial labour.

Given the multidisciplinary nature of space activities and the broad range of space activities in India, the technology transfers from the space programme to industries have recorded a steady growth and achieved a high success rate. There is no doubt that a sound approach to design and a rigorous quality-assurance culture for the space effort are responsible for this. Several measures to widely promote spin-offs from space have been adopted by the space agency in India. These include dissemination of information on potential products and technologies, the conduct of market surveys, arrangements for conferences, meetings and demonstrations to potential recipient industries, and a promotional pricing policy for technology transfers. Competition is encouraged both in the selection of recipient industries and in the marketing of products.

In the recent past, the Indian Government has also promoted a commercial company called the Antrix Corporation to undertake commercial activities related to products and services from the Indian Space Research Organization. Through this company, the Indian Space Research Organization will be pleased to consider and extend know-how transfer and other services relating to spin-off products to interested users and organizations in other countries.

The meeting rose at 11.30 a.m.

United Nations A/AC.105/PV.403

General Assembly

Official Records

Committee on the Peaceful Uses of Outer Space

403rd Meeting
Tuesday, 14 June 1994, 3 p.m.
Vienna

Chairman: Mr. Hohenfellner . . . . . (Austria)

The meeting was called to order at 3.10 p.m.

Spin-off benefits of space technology: review of current status

The Chairman: Since no other member wishes to speak on this item, the Committee has concluded its consideration of agenda item 8.

Organization of work

The Chairman: I should like to inform the Committee that I am determined to conclude the debate on agenda item 9 by tomorrow morning at the latest. During tomorrow morning's meeting I should also like to take up the question of the adoption of the first part of the report in informal consultations.

That means that I shall not allow delegations to extend their statements into tomorrow afternoon, because I want to save the time and money of Member States by reducing the use of conference services. I must also say that I am disappointed by the fact that we have only one speaker for this afternoon's meeting. On Friday afternoon we held extensive informal consultations on how we could improve our working methods. I do not want to share secrets with anyone who did not participate in the informal consultations, but one of the real problems we have is that delegations are not prepared to speak in the time available. Hence, I would urge members to speak as soon as possible, preferably this afternoon, under the relevant agenda item.

In any case, let me repeat my intention to conclude the debate on agenda item 9, "Other matters", tomorrow morning. Then, after the conclusion of agenda item 9, we shall immediately take up the adoption of the report in informal consultations, since I want to make the best use of the time available to the Committee.

Other matters

Mr. Sölendil (Turkey): Perhaps I am taking a risk in putting myself forward as the first speaker on such a controversial issue. I hope others will follow.

I wish to reiterate briefly Turkey's position on the membership issue, to be recorded verbatim.

Turkey became a member of the Committee on the Peaceful Uses of Outer Space (COPUOS) in 1977, pursuant to General Assembly resolution 32/196 B of 20 December 1977. On the basis of a gentleman's agreement within the Group of Western European and Other States in 1980, Turkey agreed to share its seat with Greece on a three-year rotation period. Thus, we last yielded our seat to Greece in 1993.

This agreement was reached on the understanding that a solution to the rotation system would soon be found. Unfortunately, this has not been the case for 14 years.

Now, as with the other rotating countries, we reiterate our request for the termination of this rotation system so as to allow us to enjoy our membership permanently. We believe that COPUOS should put an end to this unusual situation at this session.

94-85887 (E)
V.94-25763

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On this occasion, my delegation expresses its gratitude to you, Mr. Chairman, for your valuable efforts on this difficult issue, and reiterates its full support for your approach to the settlement of the problem.

Thus, the working paper contained in document A/AC.105/1994/CRP.4 seems acceptable to us as a way of setting the process in motion and should be included in the report of the Committee.

Mr. Peranhos Velloso (Brazil): I would like to make a statement under agenda item 9 to state some points of a very general nature which, in the view of the Brazilian delegation, deserve careful consideration.

At the outset, we deem it appropriate to refer to the question of the working methods of the Committee, and in particular of the Legal Subcommittee.

The Brazilian delegation is in complete agreement with the manner in which you, Mr. Chairman, have conducted the current session. The flexibility demonstrated by the Chair reflects the high regard you personally have for the concerns expressed by many delegations, without any compromise as to the efficiency of our Committee.

The informal consultations held last Friday on the question of working methods produced, in our opinion, very significant and important results. In an atmosphere of transparency and openness, we were able - through a process of collective brainstorming - to reflect on where the Committee on the Peaceful Uses of Outer Space stands today and where we would like it to be in the future.

Especially timely was the decision to recommend that the Chairman of the Legal Subcommittee hold, at its next session, consultations on the working methods of that subsidiary body, including the definition of possible new agenda items. This, we believe, is a good starting-point for properly addressing the question of efficiency in COPUOS and its Subcommittees.

The Brazilian delegation also had the opportunity to state its views on an expansion of the membership of the Committee in yesterday's informal meeting.

We are fully supportive of the Chairman's proposal that an expansion be limited to no more than eight new members, be geographically balanced and be approved by consensus. This carefully thought out formula seems to represent the best possible common ground among the members of the Committee regarding this subject.

In this light, statements calling for the establishment of criteria which have to be fulfilled by candidates sounded somewhat out of context. It appears indisputable that any interested State Member of the United Nations, irrespective of its stage of development in outer space science and technology, has a right to be considered for membership in COPUOS. After all, the foremost objective of COPUOS is to promote international cooperation in the peaceful uses of outer space, to the benefit and in the interest of all mankind. Let us, therefore, do our best to avoid judgements and perceptions that might give rise to discrimination, undermining the very Committee we seek to protect and strengthen.

The Chairman: I thank the representative of Brazil for his readiness to use the conference services made available and to speak on this occasion.

Would any other delegation like to set an example by trying to improve our working methods and show flexibility by speaking under this agenda item?

Since that does not seem to be the case, I shall now call on Mr. Jasentuliyana who, on behalf of the Committee on Conferences, will convey some information to members, that is directly related to our working methods and their rationality.

Mr. Jasentuliyana (Director, Office for Outer Space Affairs): This is with regard to a communication received by the Chairman from the Chairman of the Committee on Conferences in which one of the matters raised is that Committees in receipt of verbatim records such as ours should look into the possibility of either discontinuing them or examining any other recommendation that would suit the Committee.

I have inquired of the Office of Conference Services, which states that one possible alternative might be that the Committee have only one multilingual record. In other words, the record would contain statements in the language in which they were delivered. The Committee's deliberations are also taped, so that the tapes may be used as a record.

The second alternative might be to have a full transcript of the verbatim records only in the working languages of the United Nations - English and French - plus the tapes. These are two possible alternatives.

I do not know whether the Committee at this time is in a position to agree on one of these alternatives or on any

discontinuation. Therefore, in the light of the consultations we had on Friday, it may be more prudent at this time to let the Working Group discuss this next year and then possibly make a recommendation. The Secretariat might at that time be in a position to propose other alternatives.

The Chairman: I agree with Mr. Jasentuliyana. I think that it would be very difficult, at this stage in the work of the Committee, to come to any conclusive decision or recommendation to follow either the first or the second alternative of the recommendations of the Committee on Conferences, because I heard delegations speaking up in the informal consultations and criticizing specifically the non-use, or the inadequate use, of other working languages of the United Nations. I am not going to interfere in these positions, because as Chairman I have to be absolutely impartial. I would suggest, therefore, that we include this - and have the Secretariat draft a relevant paragraph - on the agenda of the Working Group that will consider all the working methods, and also make a specific reference to the recommendations of the Committee on Conferences.

Before adjourning the meeting, I should like to remind representatives that we will start tomorrow at 10 sharp, as usual, to conclude our consideration of agenda item 9, and then begin consideration of the report in informal consultations. This is the so-called first reading in informal consultations of the first part of the report to be prepared by the Secretariat.

Mr. Hodgkins (United States of America): Will the report, or portions of it, be available tomorrow before the beginning of our meeting? Should we check with the distribution office?

Mr. Jasentuliyana (Director, Office of Outer Space Affairs): I am informed that normal distribution to the Missions will take place at 6 o'clock in the morning, and that the first part of the report will be available to delegations here in this room.

The meeting rose at 3.25 p.m.

DEPT.

United Nations A/AC.105/PV.404

General Assembly

Official Records

Committee on the Peaceful Uses of Outer Space

404th Meeting
Wednesday, 15 June 1994, 10 a.m.
Vienna

Chairman: Mr. Hohenfellner . . . . . (Austria)

The meeting was called to order at 10.20 a.m.

Other matters *(continued)*

Mr. Mulder (South Africa): Since the South African delegation is speaking for the first time, allow me to express our appreciation to the permanent members of the Committee for permitting us to attend this thirty-seventh session as observers. We would also like to commend you, Sir, for the excellent way in which you preside over the Committee's business.

Many arguments can be advanced in support of South Africa's interest in becoming a permanent member of the Committee. Allow me to mention just a few.

South Africa's unique geographical position offers potential for the expansion of cooperation on satellite-tracking activities. In 1957 the United States Naval Research Laboratory selected South Africa as one of the prime locations for its Minitrack system for tracking Project Vanguard satellites. This led to a considerable infrastructure for the tracking of satellites being established in South Africa. The Satellite Applications Centre and Hartebeeshoek Radio Astronomy Observatory have continued to play an important role in space applications and astronomy. Remote sensing data for the southern African region from METEOSAT, LANDSAT and SPOT satellites are provided.

In addition, several university groups are carrying out active research programmes in space science. These groups operate a variety of equipment for the study of the Earth's upper atmosphere, ionosphere and magnetosphere, as well as the depletion of the ozone layer. They are also active in remote sensing research. This work includes image processing and the development of remote sensing instrumentation.

South Africa's Green Sat, to be launched at the end of 1995, will make available high-resolution images which will be of use in the planning and usage of natural resources for every country in southern Africa.

As the programmes administered by this Committee fall largely into the domain of training and exposure to space applications, South Africa could become a regional or subregional training centre for space science and technology.

With regard to South Africa's current status at the United Nations, allow me to make the following remarks. On 25 May 1994, with the adoption of Security Council resolution 919 (1994), the mandatory arms embargo against South Africa in terms of resolutions 418 (1977), 558 (1984) and 591 (1986) was lifted. This constituted the lifting of the last sanctions against South Africa.

Since November 1974 South Africa has been prevented from taking its rightful place in the General Assembly. However, next Tuesday the General Assembly will resume its session in New York. We believe - and the indications are clear - that South Africa will then take its place in the General Assembly, thus being able to participate constructively in the working activities of the United Nations.

94-85893 (E)

V.94-25764

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Mr. Senkevitch (Russian Federation) (*interpretation from Russian*): In order to implement properly the current scientific, technical and legal strategies relating to the diverse aspects of outer-space activity, to give a comprehensive view of its present and future tasks and to be sure that we do not lose sight of any essential components, we must make a global assessment of our prospects and use it as a basis for developing our present activity.

In the scientific study of prospects in any sphere, including outer-space activities, scientists distinguish three stages of work. The first is system forecasting to ensure the development of the concepts, goals and tasks of the activity and to determine the requirements for the planning of promising new projects. The second is system design, during which competing alternative versions of projects are designed, the optimal project is selected and the key problems involved in its implementation are assessed. The third stage is programme planning. This is the concluding phase of systems analysis, carried out in order to formulate a global programme of work, with a view to calculating the effectiveness of the projects and the technical and economic indicators of the operations and to establishing a time-frame.

In the research process, analysis and synthesis inevitably alternate. The system is gradually broken down into its simpler components. In other words, studying a system means establishing and understanding the forward and feedback connections between components at various levels and thereby gradually eliminating the uncertainty of our knowledge concerning the object in question.

People may, with some justification, raise the objection that our Committee is not a scientific research organization. Under its mandate, however, the Committee is the United Nations body that receives and considers the necessary information on the outer-space activities of Member States.

As is well known, the Committee's tasks include determining fields of endeavour in which it would be desirable to establish international cooperation and to implement international programmes under the general direction of the United Nations, as well as determining activities, some with United Nations support, for the use of outer-space technology for peaceful purposes. The Committee can also determine future organizational measures for ensuring international cooperation within the framework of United Nations programmes.

In the implementation of such activities, it would evidently be desirable and useful to apply the world-wide scientific practice of systems analysis and to consider both expert opinion on the subject and the problems involved in the links between the activities. No matter how unusual this formulation of the situation may seem, it could prove very useful to discuss it and to exchange opinions and information on long-term prospects for outer-space activities - for example, at special thematic conferences or seminars - and to call upon the services of outstanding specialists in systems analysis as applied to cosmonautics. And at some future date we might also take the traditional decision to establish within the framework of the Scientific and Technical Subcommittee a scientific coordination working group on systems analysis. Working proposals could be prepared and presented by the next session of the Committee.

Now I should like to speak specifically about our world's outer-space activities at the beginning of the twenty-first century.

Forecasting work is being systematically done in Russia, the United States, the European Space Agency, Japan and China and in other countries. There exists a body of normative (quantitative) and research methods of complex analysis that has been confirmed by many years of practice. Long-term forecasts of the prospects for outer-space activities are published every year or two.

I should like to describe briefly to the Committee some of the work done in Russia by specialists of the Central Institute of Space Technology, the Academy of Sciences, the Academy of Cosmonautics, of which I am Vice-President, and other scientific and planning organizations.

Russian scientists are considering three possible ways of developing outer-space activities: the maximalist, the intermediate and the minimalist versions, depending on the level of financing and the time when the implementation project is begun.

Let me briefly mention some of the projects.

First of all, we have the new generation of international systems for communications, television broadcasting, navigation, remote sensing, prospecting for natural resources, ecological monitoring and natural-disaster warnings - systems functioning with the active participation of the United Nations. As we see it, the work would start

between 2005 and 2020, depending on the amount of financing.

Next there is the pilot-plant production of unique materials in outer space, which would begin between 2005 and 2015, with industrial operation between 2020 and 2040.

Removal of space debris from orbit would start between 2010 and 2015 and be fully operational between 2015 and 2030.

For manned bases on the moon, including their use as a preparatory stage for a manned expedition to Mars, the time-frame is between 2015 and 2025.

Manned expeditions to Mars and other planets are expected to begin between 2020 and 2030.

The removal of the radioactive wastes of nuclear power plants to special repositories in outer space would start between 2015 and 2025, handling at least 800 tons a year, an amount too large to be buried under ground on Earth. The system would be fully operational, disposing of more than 1,200 tons per year (the amount currently produced), between 2025 and 2040.

The outer-space utilization of solar energy, with a power of more than 1 megawatt, should be seen between 2010 and 2020.

Lastly, systems for transmitting energy to the Earth, to supply power and illumination to polar areas and cities, would be in operation between 2020 and 2040.

For carrying out the work on these projects, we estimate that in order to set up the necessary groups of spacecraft in near-Earth space, the total carrying capacity for cargoes sent into space, even for the intermediate variant, will increase from our current estimate of between 800 and 1,000 tons per year to between 3,000 and 5,000 tons per year by 2020 and up to 10,000 tons per year by 2030.

Many of these tasks at the beginning of the twenty-first century will require carrier rockets with a maximum payload of 100 tons placed into orbit (rockets of the "Energiya" type); the payload will increase to between 350 and 400 tons by the year 2020 and to between 500 and 600 tons by 2030.

Even if only a part of these predicted operations will be carried out with active United Nations participation, the Committee will find it useful to make arrangements to familiarize itself with the materials of the various countries and to use the organizational forms I have mentioned. No significant factor, no key problem should escape our attention; the Committee and its subcommittees can and must make a maximum effort to contribute to a well-reasoned scientific, technical and juridical solution of these problems. The future of cosmonautics and the welfare of succeeding generations in the next millennium depends on this.

Ms. Roa-Suazo (Nicaragua) *(interpretation from Spanish)*: I wish to address the Committee on behalf of the Group of 77, touching briefly on three main points.

The Group of 77 submitted a detailed working paper during the thirty-first session of the Scientific and Technical Subcommittee on the subject of holding a third UNISPACE conference. The paper, while endorsing the need for holding such a conference, also provided substantial views on various matters, including the agenda, organization, venue and funding. Taking into account the views expressed by many delegations during this session, the Group of 77 believes that the Committee should during the current session recommend the holding of such a conference.

As changes in the international scene and developments in outer space science and technology since 1982 justify convening such a conference, the Committee must at this session identify a set of concrete steps towards holding such a conference.

We believe that the working papers and other documents submitted on this subject, including those by India, Pakistan, the Group of 77 and the secretariat, and the suggestions made by various delegations during the current session form a good basis for members of the Committee to discuss and decide on, at the next session of the Scientific and Technical Subcommittee, a set of detailed objectives and an agenda for such a conference. Hence, the Group of 77 requests that the Chairman take action with a view to achieving consensus at this session on the question of holding the conference.

The Group of 77 supports the Chairman's consultations on the possible enlargement of the Committee, reflecting the principle of equitable geographic distribution among the various regional groups concerned, in accordance with the practice of the United Nations system. It takes note of the formal requests for membership of the Committee submitted to the President of the General

Assembly by a number of members of the Group. In the light of the manifest interest of many countries in joining COPUOS, the Committee should take a final decision on the matter during the present session so that the General Assembly can take action on it during its forty-ninth session.

The Group of 77 also supports the Chairman's consultations on the question of the working methods of COPUOS and its Subcommittees. With respect to this question, particularly regarding the Legal Subcommittee, we believe that the principle of flexibility must be applied. In taking any decision on the matter, COPUOS should be very careful not to underplay the role of the Legal Subcommittee. Rather, we should be concerned with enriching the agenda of that subsidiary body by including items of great interest to many delegations, such as the topic of space debris. The Group of 77 will continue to follow this question with the utmost interest and will participate in the consultations to be held by the Chairman of the Legal Subcommittee at its next session.

Mr. Lee (Republic of Korea): Mr. Chairman, I wish to address specifically the issue of enlargement of the membership of the Committee, with particular attention to your proposal, set out in document A/AC.105/1994/CRP.4. At the outset, my delegation wishes to pay a high tribute to you, Sir, for having produced, after extensive consultations, a very constructive and well balanced proposal on membership of the Committee. Indeed, your wisdom, skilful leadership and untiring efforts have enabled us at last to have a concrete proposal on the basis of which the Committee can finally conclude its years-long discussion on this subject with an agreement on the expansion of its membership. My delegation fully supports this proposal and hopes that all the other members of the Committee can go along with it. My delegation also shares the view expressed by the Chairman of the Group of 77 on this subject in the statement she has just made.

Having said this, I wish to offer some comments on how the Committee can satisfactorily attain the objectives set forth in the Chairman's proposal. First and foremost, my delegation strongly believes that the Committee should take the final decision to enlarge its membership at this session, without any further delay, taking full advantage of the momentum generated among members under the Chairman's leadership. By doing so, the Committee would enable the General Assembly at its upcoming session to take appropriate final action so that the actual enlargement of the Committee's membership would take place during the forty-ninth session of the General Assembly.

My delegation considers that, in order to see this happen, the following two crucial points should be fully taken into account. The first point relates to paragraph 3 of the Chairman's proposal. When the President of the General Assembly appoints additional members in consultation with the regional groups and the Chairman of the Committee, priority should be given as a matter of principle to those countries which are already alternate members of the Committee and to those countries which have already expressed their desire for membership officially through communications to the President of the General Assembly. We believe that the final decision of the Committee on this issue, to be made at this session, will have been made possible mainly on the basis of the desire officially expressed thus far by those States. Therefore, it is only fair to make a distinction between those States which are already on the list of candidates and other States which might express their desire for membership at a later stage. We strongly suggest that this point be duly addressed and that it should be reflected in one way or another in the final version of the Chairman's proposal.

My second point relates to paragraph 4 of the Chairman's proposal. Those countries which receive the endorsement of their regional group and enjoy the consent of the Chairman and the other members of the Committee should be appointed by the President of the General Assembly on an individual basis - in other words, without being linked to the appointment of other candidates which might face difficulties in the process of appointment.

In the light of paragraph 4 of the Chairman's proposed text, which, if adopted, would freeze the issue of membership enlargement for some time to come, we believe that it is only fair and just that those countries which are supported by regional groups and by the Chairman and the other members of the Committee, and which thus meet the requirements for membership, should not be deprived of their right and their opportunity to be appointed as members of the Committee this year at the forthcoming session of the General Assembly. Hence, we also strongly suggest that this second point be duly addressed and reflected in the final version of the Chairman's proposal.

I fully realize the delicate nature of the proposed language carefully and laboriously worked out by the Chairman. However, we are confident that, given the determination of the members of the Committee to find a satisfactory solution to this important issue during the current session, the Committee will be able to find an

appropriate solution by introducing minimal adjustments to the proposed text.

In conclusion, I wish to express my delegation's readiness to cooperate fully with you, Mr. Chairman, and with other interested delegations in making a contribution to the finalization of the Chairman's proposed text.

The Chairman: I wish to recall that the rules of procedure provide that observer delegations are not entitled to submit amendments to any text circulated in this room. I have been very generous in calling upon observer delegations, but I do not accept that observer delegations should offer any amendment to texts not already decided upon by the Committee.

I wish also to recall that, in accordance with the rules of procedure, once we start informal consultations on the report, there is to be no participation by observer delegations.

Mr. Ventura Valero (Mexico) (*interpretation from Spanish*): My delegation is grateful for this opportunity to speak very briefly on the item on the enlargement of our Committee. As members know, the Mexican delegation took an active part in the informal consultations two days ago. Nevertheless, we would like formally to register our position on this agenda item.

The Mexican delegation recognizes the intensive efforts you have made, Mr. Chairman, to arrive at a formula for the enlargement which is satisfactory to all members of the Committee. We have carefully studied your proposal and we agree with it.

We share the view that the enlargement should be limited to no more than eight members, on the basis of the principle of equitable geographical distribution. At the same time, the Mexican delegation, as stated in the informal consultations, interprets the consensus mentioned in paragraph 3 of the Chairman's proposals to mean consensus within each regional group concerning the seat to be assigned to that group in any enlargement. In accordance with the United Nations practice, no regional group can express objections to the decision reached by any other regional group.

The Chairman: We have thus concluded our consideration of agenda item 9 "Other matters".

The meeting rose at 10.55 a.m.

United Nations A/AC.105/PV.405

General Assembly

Official Records

Committee on the Peaceful Uses of Outer Space

405th Meeting
Thursday, 16 June 1994, 10 a.m.
Vienna

Chairman: Mr. Hohenfellner . . . . . (Austria)

The meeting was called to order at 11.45 a.m.

Report of the Committee to the General Assembly

The Chairman: I call first on the Rapporteur.

Mr. Telles Ribeiro (Brazil), Rapporteur of the Committee: We now have before us the draft report, in the documents we examined yesterday and earlier today: documents A/AC.105/L.205 and Add.1, Add.2 and Add.3. We will proceed, as is the usual practice in our Committee, to review them section by section. Of course, during our discussions some of the changes referred to in documents A/AC.105/1994/CRP.6 and CRP.7 will be mentioned as well.

The Chairman: I draw the attention of the Committee to document A/AC.105/L.205. May I take it that the Committee adopts paragraphs 1 to 17?

Paragraphs 1 to 17 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 18 to 23?

Paragraphs 18 to 23 were adopted.

The Chairman: May I take it that the Committee adopts paragraph 24?

Paragraph 24 was adopted.

The Chairman: May I take it that the Committee adopts paragraphs 25 to 31?

Paragraphs 25 to 31 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 32 to 34?

Paragraphs 32 to 34 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 35 to 40?

Paragraphs 35 to 40 were adopted.

The Chairman: I have been invited to make the following statement.

I have the pleasure to inform the Committee that the countries selected by the United Nations to host the Centre for Space Science and Technology Education for the Latin American and Caribbean region, Brazil and Mexico, have notified the Secretariat of the conclusion of negotiations with a view to its establishment. The Secretariat of the Centre, which is to be located initially at the national Institute of Space Research of Brazil and to have a Secretary-General of Mexican nationality, will rotate every four years between Brazil and Mexico, with each campus beginning activities simultaneously under the coordinated guidance of the Board of Governors.

The Secretariat will reflect this agreement, with appropriate language, in our report.

We now take up paragraphs 41 to 43. May I take it that the Committee adopts those paragraphs?

Paragraphs 41 to 43 were adopted.

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The Chairman: May I take it that the Committee adopts paragraphs 44 and 45?

Paragraphs 44 and 45 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 46 to 50?

Paragraphs 46 to 50 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 51 to 56?

Paragraphs 51 to 56 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 57 to 64?

Paragraphs 57 to 64 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 65 to 76?

Paragraphs 65 to 76 were adopted.

The Chairman: Does the Committee wish to adopt paragraphs 77 to 85?

Paragraphs 77 to 85 were adopted.

The Chairman: May I take it that the Committee adopts paragraphs 86 to 92.

Paragraphs 86 to 92 were adopted.

The Chairman: May I take it that the Committee wishes to adopt paragraphs 93 to 97.

Paragraphs 93 to 97 were adopted.

The Chairman: We now turn to document A/AC.105/L.205/Add.1. Does the Committee wish to adopt paragraphs 1 to 7?

Paragraphs 1 to 7 were adopted.

The Chairman: May I take it that the Committee wishes to adopt paragraphs 8 to 20?

Paragraphs 8 to 20 were adopted.

Mr. Louet (France) *(interpretation from French):* What has happened with regard to paragraph 18?

The Chairman: Paragraph 18 has been deleted following informal consultations. There will be a renumbering of all paragraphs after the deletion.

We now take up paragraphs 21 to 30.

Mr. María Curia (Argentina) *(interpretation from Spanish):* I am a little confused. Could the Secretary or the Rapporteur read out paragraph 29 of the final version?

The Chairman: I call on the Rapporteur.

Mr. Telles Ribeiro (Brazil), Rapporteur of the Committee: Paragraph 29 stays as it is. There will be a paragraph 29 *bis*, which reads:

> "The view was expressed that international cooperation in the exploration and peaceful uses of outer space should strive to allocate resources efficiently and that it should be based on the principles of international law, including the Charter of the United Nations and the outer space Treaty. In this regard, States should be free to determine all aspects of their cooperation on equitable and mutually agreeable terms and the most effective and appropriate modes of cooperation should be chosen on an ad hoc basis."

This addition is the last paragraph of document A/AC.105/1994/CRP.6.

We also have an amendment to paragraph 29 - additional wording at the end - submitted by the representative of Ecuador. It is in Spanish and has yet to be edited and translated into English. The amended paragraph 29 would read:

(spoke in Spanish)

> "The view was expressed that the concept of the common heritage of mankind, as developed by the Third United Nations Conference on the Law of the Sea, could serve as a basis for discussions on matters relating to outer space benefits and for the establishment of an appropriate regulatory instrument."

Paragraph 29 *bis*, which I have just read out, would follow.

The Chairman: I believe that the situation is sufficiently clarified. The appropriate wording in all working languages will be prepared by the Secretariat.

May I take it that the Committee wishes to adopt paragraphs 21 to 30?

Paragraphs 21 to 30 were adopted.

The Chairman: Does the Committee wish to adopt paragraphs 31 to 38?

Paragraphs 31 to 38 were adopted.

The Chairman: We now turn to document A/AC.105/L.205/Add.2. Does the Committee wish to adopt paragraphs 1 and 2?

Paragraphs 1 and 2 were adopted.

The Chairman: For reasons of order, we now turn to document A/AC.105/L.205/Add.3. May I take it that the Committee wishes to adopt paragraphs 1 to 6?

Paragraphs 1 to 6 were adopted.

The Chairman: We now return to A/AC.105/L.205/Add.2. Does the Committee wish to adopt paragraphs 3 to 6?

Paragraphs 3 to 6 were adopted.

The Chairman: Does the Committee wish to adopt paragraphs 7 to 10?

Paragraphs 7 to 10 were adopted.

Mr. Ventura Valero (Mexico) *(interpretation from Spanish):* My delegation wanted to wait until this important part of our report was adopted so that the statement I shall now make is appropriately reflected in the records of this meeting.

The Mexican delegation expresses its gratitude and support for your intensive and fruitful work, Mr. Chairman, to find the formula reflected in paragraphs 7 to 10, with which we agree. At the same time, we wish to reiterate that we interpret the consensus mentioned in paragraph 9 to mean consensus in each regional group in naming additional members, so that, in accordance with the practice of the United Nations, no other regional group can object.

The Chairman: We shall now take up consideration of paragraphs 11 to 14 *bis*.

Mr. Chandrasekhar (India): The Indian delegation would like to make a few comments on paragraph 11. We are grateful to you in particular, Mr. Chairman, and to the Committee in general for establishing a Working Group to improve the working methods of the Committee and its subsidiary bodies. But, even though we respect all the suggestions made in document A/AC.105/CRP.8, we believe it would take a long time for the Working Group to discuss them all. The Working Group should not become an obstacle to progress, rather than making progress on substantive issues. On this understanding, the Indian delegation agrees to establishing the Working Group, and hopes that in 1995, thanks to your able leadership, Sir, it will result in substantial improvements rather than impeding progress.

The Chairman: May I take it that the Committee is now prepared to adopt paragraphs 11 to 14 *bis*?

Paragraphs 11 to 14 bis were adopted.

The Chairman: Does the Committee wish to adopt paragraph 15?

Paragraph 15 was adopted.

The Chairman: May I take it that the Committee wishes to adopt paragraphs 16 to 21?

Paragraphs 16 to 21 were adopted.

The Chairman: Does the Committee wish to adopt paragraphs 22 to 24?

Paragraphs 22 to 24 were adopted.

The Chairman: We will now take up the adoption of the draft report as a whole.

Mr. Chandrasekhar (India): Where will the report reflect the paper submitted by the Group of 77 which was circulated to members of the Committee and the statement made by its Chairman in the Committee?

The Chairman: I call on the Secretary of the Committee to clarify that.

Mr. Jasentuliyana (Secretary of the Committee): The paper and the statement could be mentioned in the final

section of the draft report; there is a reference to three areas - UNISPACE, working methods and membership - so we could have a short paragraph there referring to the statement of the Group of 77 on those three issues.

The Chairman: I note that the Committee agrees with that clarification.

Is the Committee in agreement with the draft report as a whole?

The draft report, as a whole, was adopted.

Closing statements

The Chairman: We have just completed the final item on the agenda for this year's session of the Committee, and it is, as usual, an occasion for the Chairman to make a brief statement.

I would like first to thank all members most wholeheartedly for the very great spirit of cooperation they have shown, and - something that I was not able to say in New York last year - for the inspiring contributions of many delegations to our discussions. I have noted at this year's session that we have been much more creative in finding new approaches to new ideas. I am therefore very optimistic in looking forward to next year's sessions of the Subcommittees and of the main Committee.

In this connection, I would like to stress that I have taken very seriously all the concerns expressed during our debates. I have noted as particularly satisfactory the two rounds of informal consultations this year on working methods and on enlargement, and I am very grateful for all the contributions made during those consultations. We have, of course, to maintain the momentum and discuss all these subjects thoroughly and seriously next year in the relevant bodies.

I also appeal to all members to come to the General Assembly in the fall in a spirit of the utmost cooperation on the question of enlargement. I know that several delegations are very interested in joining the Committee, and I think we have found a sound basis for a compromise solution. I therefore appeal to members to preserve the spirit of Vienna when we come together again in New York and this item is taken up at the General Assembly.

In addition to thanking members and the observer delegations, I should like to express my gratitude to the specialized agencies that participated in our meetings. My deep thanks go to Mr. Jasentuliyana and the whole secretariat of the Office for Outer Space Affairs, with special mention of Dr. Abiodun, our Expert on Space Applications.

May I also thank the interpreters and verbatim reporters, who had some hard days during our brain-storming sessions, particularly when there were no prepared statements, which makes the task difficult. I also thank the conference officers and all other members of the Secretariat who helped us come to this successful end.

We are today in a rare situation. My colleague from Chile, one of the most experienced people in the Committee, may recall that we have not very often been able to conclude our sessions on a Thursday morning. In doing so today, we have shown how intensively we worked together and how important was members' spirit of cooperation.

I also thank the new Vice-Chairman of the Committee, who came here cold, as it were, because of his position as Ambassador of Romania in Vienna, and did a marvellous job chairing the Committee from time to time in my absence.

Finally, I wish specifically to mention the Rapporteur, who also did a marvellous job, especially in yesterday's difficult consultations, in helping us to overcome significant difficulties. We are proud that we have Edgard Ribeiro with us, and his delegation can be proud, because he had split functions as Rapporteur and member of the delegation of Brazil, which listened to him.

I hope I have not forgotten anybody. I thank everybody concerned.

Mr. González (Chile) *(interpretation from Spanish)*: I am sure I speak for all delegations in expressing sincere gratitude for the grand welcome once again accorded us by the Government of Austria and its Foreign Ministry, as represented by you, Mr. Chairman. It has been a great pleasure to return to the beautiful city of Vienna and to avail ourselves of the fine conference facilities here, which have contributed greatly to the smooth conduct of our work, as has the effective and efficient support of all members of the Office for Outer Space Affairs, conference servicing staff and other members of the secretariat. In our view, there can be no doubt that Austria has once again demonstrated its ability to provide an environment favourable to our future work - for which my delegation reiterates its support.

For various reasons I wish to convey our special thanks to the Vice-Chairman, the representative of Romania, for his participation and his - not surprisingly - effective guidance of informal consultations. We are grateful also to the representative of Brazil for the splendid way in which he carried out the functions of Rapporteur.

My delegation wishes publicly to reiterate that it remains at the disposal of the Chairman.

Mr. Muñoz Laborde (Spain) *(interpretation from Spanish):* Without wishing to prolong this meeting any longer than necessary, I want briefly to endorse the words of the representative of Chile, and very sincerely to thank you, Mr. Chairman, for the admirable way in which you conducted the work of the Committee. It was thanks to you that we succeeded in unblocking a number of outstanding items. Nor can I forget the work of the Outer Space secretariat, the interpreters, the Committee officers, and all those who provide support for our work. My country is grateful to them all.

Mr. Chandrasekhar (India): On behalf of my delegation and of the Asian Group, I would like to thank you, Mr. Chairman, for the excellent way in which you have conducted the Committee's proceedings. You will have seen that all delegations have great confidence in you; they have entrusted you with a very complex subject to be taken up during the coming session of the General Assembly. My delegation and the Asian Group are very confident that during that session you will handle the matters of this Committee and its membership very well, and that you will keep the spirit of the Committee alive for many years to come.

We also thank the Government of Austria, the conference secretariat and the Director and staff of the Office for Outer Space Affairs, who provided all the support needed for the smooth conduct of the Committee's proceedings. We particularly thank the Rapporteur, who conducted a very difficult process of negotiations on a third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, a subject of interest to us and to the Group of 77. I am sure that we will make much further progress under his leadership.

Mr. He Qizhi (China) *(interpretation from Chinese):* The Chinese delegation fully agrees with all that previous speakers have said. We convey to you, Mr. Chairman, our respect and our gratitude. This session has been marked by notable achievements on important subjects; these were possible thanks to common efforts and contributions by all participants, but also thanks, Sir, to the able, successful way in which you guided the session. We clearly saw at this session a spirit of cooperation and consultation; we hope this spirit will continue to pervade our future work, and that these same factors will enable us at future sessions to achieve further success.

I thank the Vice-Chairman, the representative of Romania, and the Rapporteur, the representative of Brazil, for their enormous efforts and contributions. We also thank the members of the outer space secretariat under the leadership of Mr. Jasentuliyana, as well as the translators and interpreters, whose diligent work did much to facilitate our work.

Finally, we thank the host country, Austria, and its delegation for their warm hospitality. Their welcome was exemplary, and the facilities provided for the Committee were an important element in our success.

Mr. Moutsoulas (Greece): On behalf of my delegation I would like to add my voice to those of previous speakers, and express my gratitude to you, Sir, for the wisdom with which you conducted our meetings. We also thank the secretariat of the Office for Outer Space Affairs and the Rapporteur and other Committee officers. Additionally, we thank the Austrian delegation for the warm hospitality we enjoyed during our stay in Vienna.

The Chairman: I wish representatives success during their remaining time in Vienna, and a pleasant trip when they take their leave. I look forward to seeing representatives in the autumn, at the regular session of the General Assembly.

Closure of the session

The Chairman: I declare closed the thirty-seventh session of the Committee on the Peaceful Uses of Outer Space.

The meeting rose at 12.20 p.m.